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C-122 file

NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 10-16-81	
Company STEVENS OIL COMPANY				Connection TO ATMOSPHERE			
Pool WILDCAT				Formation ABO		Unit	
Completion Date 10-11-81		Total Depth 6290		Plug Back TD 4900'		Elevation 3988 Gl.	
Farm or Lease Name Hanagan Federal				Well No. 1			
Csg. Size 4 1/2	Wt. 10.5	d 4.052	Set At 6290	Perforations: From 4378 To 4411		Unit Sec. Twp. Rge. B 14 7S 26E	
Thq. Size 2 3/8	Wt. 4.7#	d 1.995	Set At 4305	Perforations: From OPENENDED			
Type Well - Single - Bradenhead - G.C. or G.O. Multiple SINGLE				Packer Set At		County CHAVES	
Producing Thru TUBING		Reservoir Temp. °F 94 @ 4305		Mean Annual Temp. °F 60°		Baro. Press. - P _a 13.2	
State New Mexico		Prover 2"		Meter Run		Taps	
L		H	Gg .6644	% CO ₂ .073	% N ₂ 9.204	% H ₂ S -0-	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI							871		871	CHOKE	48 Hrs.
1.	2"	x	1875	440		50	830		830	9/64	1 Hr.
2.	2"	x	1875	786		65	786		786	OPEN	1 Hr.
3.	2"	x	250	712		67	712		730	OPEN	1 Hr.
4.	2"	x	500	349		66	349		349 -	OPEN	1 Hr.
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft	Gravity Factor Fg	Super Compress. Factor Fpv	Rate of Flow Q, Mcfd
1	6082		453.2	1.010	1.227	1.041	356
2	6082		799.2	.9952	1.227	1.067	633
3	1087		725.2	.9933	1.227	1.059	1017
4	4279		362.2	.9943	1.277	1.030	1948
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio T.S.T.M. Mcf/bbl.
1.	.692	510	1.45	.922	A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.
2.	1.22	525	1.49	.879	Specific Gravity Separator Gas .6644 XXXXXXXX
3.	1.11	527	1.50	.892	Specific Gravity Flowing Fluid XXXXX
4.	.554	526	1.49	.942	Critical Pressure 654 P.S.I.A. -0- P.S.I.A.
5.					Critical Temperature 352 R -0- R

P_c* 883.53 P_w* 781

NO.	P _i ²	P _w	P _w ²	P _c ² - P _w ²
1		845.7	715.2	65.8
2		807.9	652.7	128.3
3		741.2	549.4	231.6
4		448.7	201.33	579.7
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 3.37219$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.8741$

ACF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2923$

Absolute Open Flow 2,923 Mcfd @ 15.025	Angle of Slope @ 49° 01	Slope, n .8687
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Remarks: * Calculated from known Bottom Hole Pressures.

Approved By Commission:	Conducted By: W.S.	Calculated By: M.K.	Checked By: M.K.
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STEVENS OIL COMPANY

HANAGAN 14 FEDERAL NO. 1

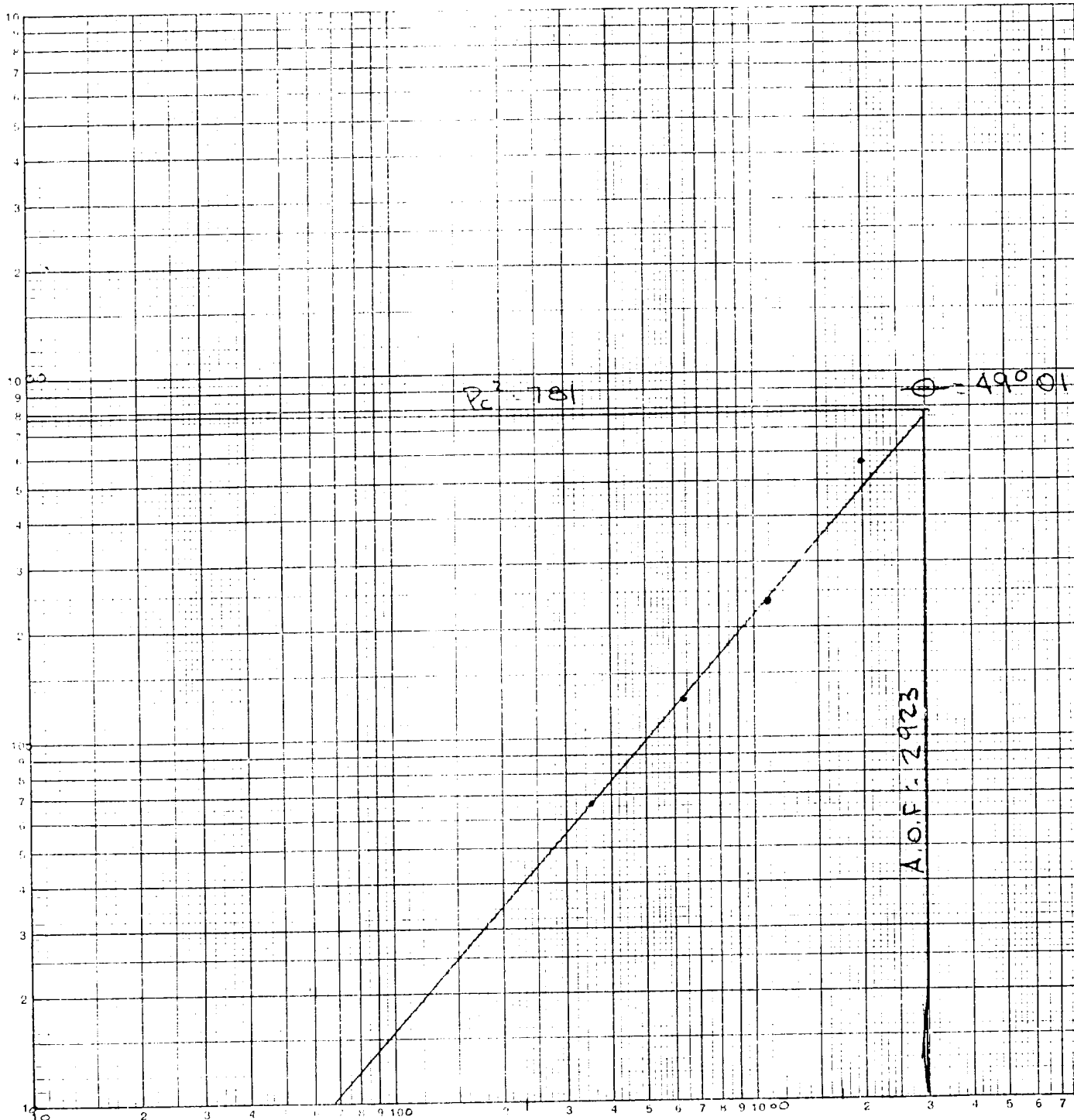
OCTOBER 16, 1981

$$1017 \left(\frac{781}{231.6} \right)^{.8687} = 2923$$

$P_c^2 - P_w^2$

45 7400

W.C.F. / D.Y.



W.C.F. / D.Y. 1000's

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_s)

COMPANY Stevens Oil Co. LEASE Hanagah 14 Fed. WELL NO. 1 DATE 10-16-81

LOCATION: Unit B Section 14 Township 7 S Range 26 E

H 4305 L/H G 6644 % CO₂ 673 % N₂ 9.204 % H₂S -0-

GH P_{cf} 654 T_{cf} 352
S.I. TABLE 10.1 TABLE 10.2 TABLE 10.3

LINE	1	2	3	4	5	6	7	8
1 T _w (W.H. + R)	510	510	510	525	527	526		
2 T _s (B.H. + R)	554	554	554	554	554	554		
3 $T = \frac{T_w + T_s}{2}$	532	532	532	539.5	540.5	540		
4 T _{ESM}	862	869	873	883	894	932		
5 T _{ES}	458.584	462.308	464.436	476.33	483.2	503.3		
6 T _{ES} T _{ESM}	6.23711	6.18687	6.1585	6.0043	5.9192	5.68320		
7 P_c (Table XIV)	1,2635	1,26112	1,25978	1,25251	1,2485	1,23753		
8 P _f or P _s	992.2	992.2	949.2	904.2	828.2	499.2		
9 P_c^2 or P_s^2	984.46	984.46	900.98	817.58	685.92	249.2		
10 $P_c^2 - P_s^2$ or $P_{w^2} = P_s^2 / e^s$	779.149	780.62	715.18	652.75	549.37	201.37		
11 P _w or P _w	882.69	(883.53)	(845.7)	(807.9)	(741.2)	(448.7)		
12 $P_w \left(\frac{F_w + P_s}{2} \right)$ or $\left(\frac{P_c + P_f}{2} \right)$		937.865	897.45	856.05	784.7	473.9		
13 P _f = (P/P _{cf})	1.43	1.43	1.37	1.31	1.20	1.24		
14 T _f = (T/T _{cf})	1.51	1.51	1.51	1.53	1.54	1.53		
15 Z (Table XI)	.869	.873	.883	.894	.932			

JOHN W. WEST ENGINEERING COMPANY
412 NORTH DAL PASO, HOBBS, NEW MEXICO

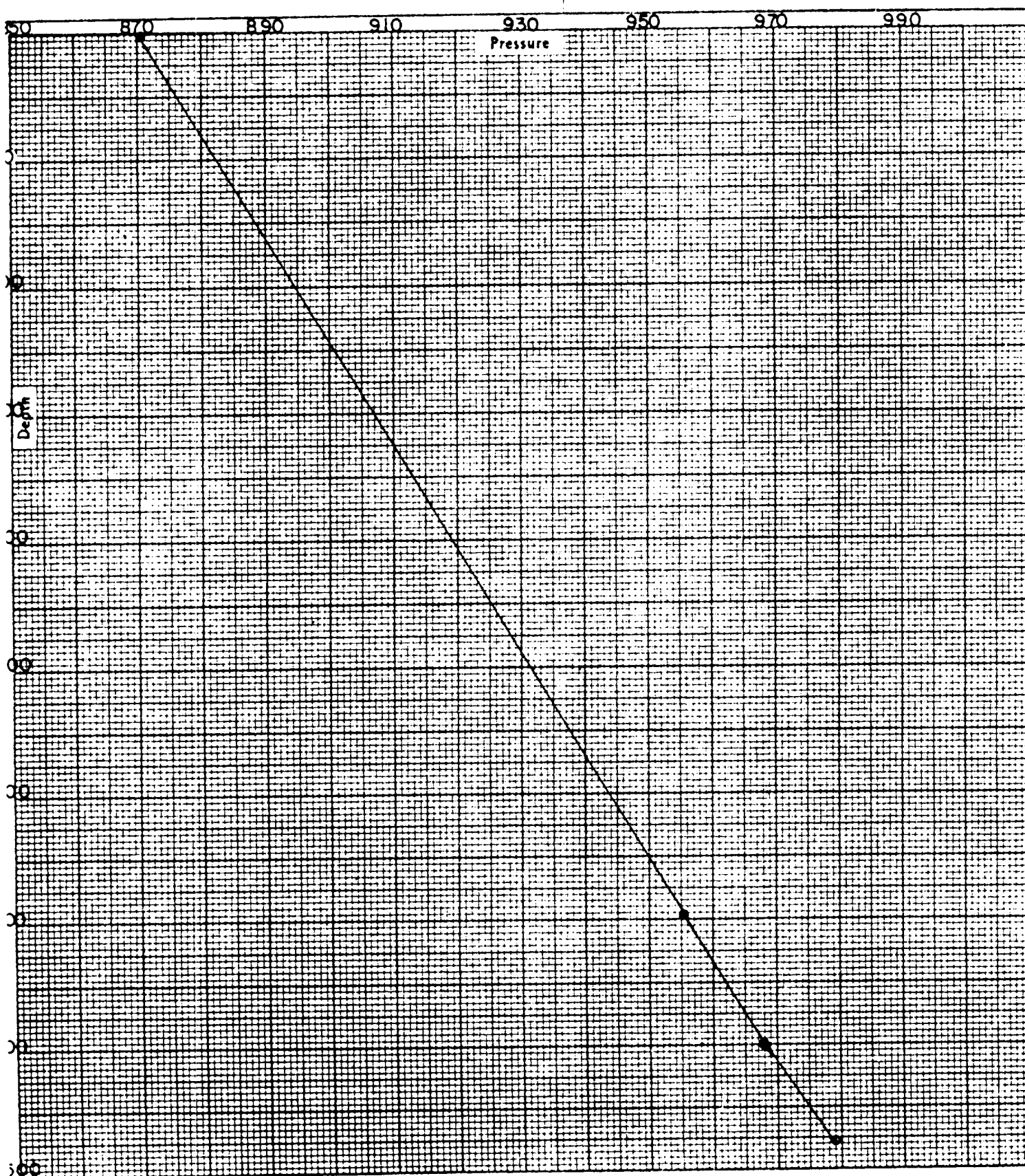
TELEPHONES 393-3942
393-3117

BOTTOM HOLE PRESSURE SURVEY REPORT

OPERATOR STEVENS OIL COMPANY
LEASE HANAGAN 14 FEDERAL
WELL NO. 1
FIELD _____
DATE 10-16-31 TIME 9:00 A.M.

STATUS Shut-In TEST DEPTH 4394'
TIME S.I. 48 Hrs LAST TEST DATE Initial
CAS. PRES. _____ BHP LAST TEST _____
TUB. PRES. 871 BHP CHANGE _____
ELEV. _____ FLUID TOP _____
DATUM _____ WATER TOP _____
TEMP 94° F RUN BY W.S.
CLOCK NO. 2145 GAUGE NO. 19389
ELEMENT NO. 18055 (0-3500 psi)

DEPTH	PRESSURE	GRADIENT
000	871	
3500	956	.024
4000	968	.024
4394	979	.028

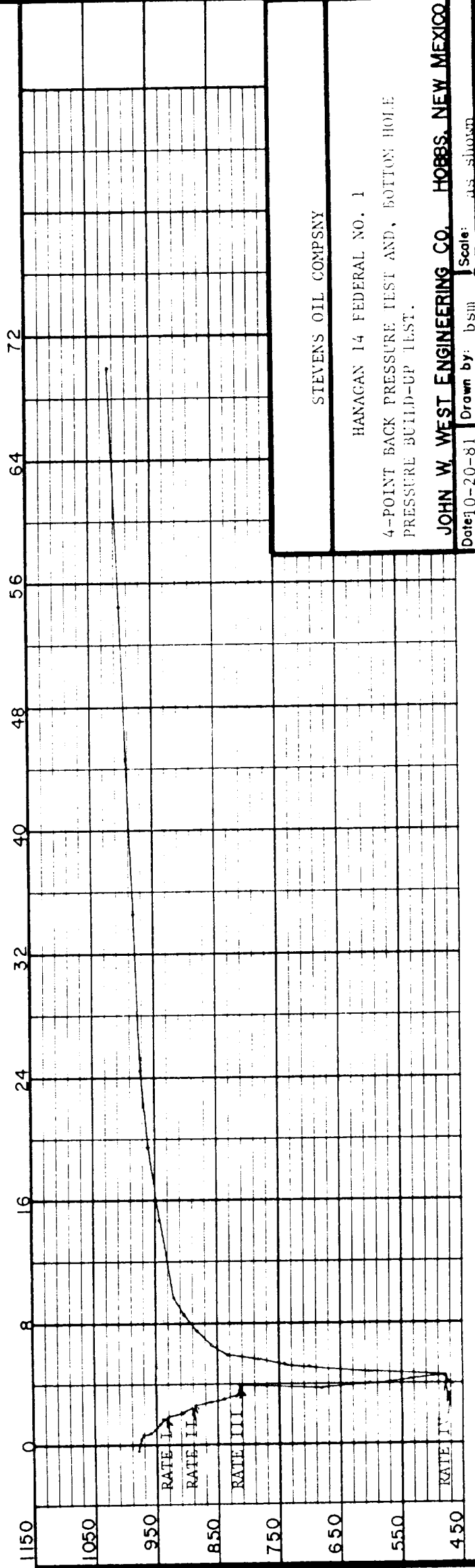


TEST DATE: OCTOBER 16-19, 1981
TEST DEPTH: 4394 FEET

ELEMENT NO: 18055
RANGE 0-3500 Psi
CLOCK NO: 2145
RANGE: 0-72 Hour

NOTE: See tabulation of Times and Pressures on attached sheet.

TIME IN HOURS



STEVENS OIL COMPSNY

HANAGAN 14 FEDERAL NO. 1

4-POINT BACK PRESSURE TEST AND, BOTTOM HOLE
PRESSURE BUILD-UP TEST.

JOHN W. WEST ENGINEERING CO. HOBBS, NEW MEXICO

Date: 10-20-81 Drawn by: bsm Scale: as shown

STEVENS OIL COMPANY
 HANAGAN 14 FEDERAL NO. 1
 4-POINT BACK PRESSURE TEST AND
 BOTTOM HOLE PRESSURE BUILD-UP TEST.
 TABULATION OF TIMES AND PRESSURES.

TEST CONDUCTED BY:
 JOHN WEST ENGINEERING COMPANY

TEST DATE: OCTOBER 16-19, 1981
 TEST DEPTH: 4394 FEET
 ELEMENT NO: 18055 (0-3500 psi)
 OPERATOR: W.S.

<u>DATE</u>	<u>TIME</u>	<u>CUM HRS. / MIN.</u>	<u>PSIG @ 4394 FEET</u>
10-16-81	9:00 A.M.		979 Gauge reached 4394 Feet
	9:15 A.M.	00 Hrs. 00 Min.	979 Begin Test
	9:30 A.M.	00 15	975
	9:45 A.M.	00 30	973
	10:00 A.M.	00 45	963
	10:15 A.M.	01 00	952
	10:30 A.M.	01 15	945
	10:45 A.M.	01 30	936 End Rate I
	11:00 A.M.	01 45	920
	11:15 A.M.	02 00	909
	11:30 A.M.	02 15	897
	11:45 A.M.	02 30	891 End Rate II
	12:00 Noon	02 45	865
	12:15 P.M.	03 00	843
	12:30 P.M.	03 15	824
	12:45 P.M.	03 30	815 End Rate III
	1:00 P.M.	03 45	681
	1:15 P.M.	04 00	598
	1:30 P.M.	04 15	532
	1:45 P.M.	04 30	486 End Rate IV
	1:45 P.M.	00 Hrs. 00 Min.	486 Begin Build-Up
		00 15	607
		00 30	703
		00 45	744
	2:45 P.M.	01 00	781
		01 30	836
	3:45 P.M.	02 00	861
	4:45 P.M.	03 00	888
	5:45 P.M.	04 00	906
	6:45 P.M.	05 00	918
10-16-81	11:45 P.M.	10 00	947
10-17-81	4:45 A.M.	15 00	961
10-17-81	9:45 A.M.	20 00	972
10-17-81	7:45 P.M.	30 00	986
10-18-81	5:45 A.M.	40 00	995
10-18-81	3:45 P.M.	50 00	1004
10-19-81	1:45 A.M.	60 00	1011
10-19-81	7:15 A.M.	65 30	1016 Chart ran down, End Test.

NEW-TEX LAB

P. O. BOX 1161
HOBBS, N.M. 88240

No. 5873
Run No.
Date of Run 10-19-81
Date Secured 10-19-81

CERTIFICATE OF ANALYSIS

A Sample of Stevens Oil Company Hanagan 14 Federal #1
Secured from John West Engineering
At 412 N. Dal Paso Secured by
Hobbs, NM 88240 Time Date
Sampling conditions Press
Temp.

FRACTIONAL ANALYSIS

Percentage Composition

	MOL %	LIQ. %	G.P.M.
Carbon Dioxide	.073		
Air			
Nitrogen	9.204		
Oxygen			
Hydrogen sulfide			
Hydrogen			
Methane	82.593		
Ethane	4.384		1.169
Propane	1.927		.529
Butanes			
Iso-Butane	.345		.113
N-Butane	.720		.226
Pentanes			
Iso-Pentane	.198		.072
N-Pentane	.197		.071
Hexanes	.359		.147
Heptanes			
Octanes			
TOTAL	100.000		2.327

Calc. Sp. Gr. 0.6644
Calc. A.P.I.
Calc. Vapor Press. PSIA
Sp. Gr.
Mol. Wt. 19.24

LIQUID CONTENT (GAL./MCF)

Propane Calc. G.P.M. .529
Butanes Calc. G.P.M. .339
Pentanes Plus. G.P.M. .290
Ethane Calc. G.P.M. 1.169
RVP Gasoline G.P.M.
B.T.U./Cu. Ft. @ 14.696 P.S.I.A.
Dry Basis 1029
Wet Basis 1011
Sulfur Analysis by Titration
Gr./100 Cu. Ft.
Hydrogen Sulfide
Mercaptans
Sulfides
Residual Sulfur
Total Sulfur

Run by Deane Simpson Checked by Approved by

Additional Data and Remarks